

## SN3262 – Network Management, Administration and Security

## Exercise 6: Use of SNMP utilities

There are several useful “SNMP” utilities that use the basic SNMP messages to retrieve instances of MIB objects from a device running a SNMP agent.

One of the departmental servers (dali) is SNMP enabled and can be interrogated using the community string docm\_student.

In the exercises below you should use commands of the form:

snmpv2  
↓  
snmp~~xxx~~ -v2c -c docm\_student 149.170.195.144 *OID of MIB Object/Instance of MIB Object*  
↑                   ↑  
community string   IP address of dali

where `snmpXXX` is one of the SNMP utilities.

1. Here is how to get sysUpTime using *snmpget*.

```
snmpget -v2c -c docm_student 149.170.195.144 1.3.6.1.2.1.1.3.0
```

Here is what you should get back.

DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (242918977) 28 days, 2:46:29.77

You could have got sysUpTime using the following way of writing the OID.

```
snmpget -v2c -c docm_student 149.170.195.144 DISMAN-EVENT-MIB::sysUpTimeInstance
```

Try it.

What happens if you try the following?

```
snmpget -v2c -c docm_student 149.170.195.144 1.3.6.1.2.1.1.3
```

```
snmpgetnext -v2c -c docm_student 149.170.195.144 1.3.6.1.2.1.1.3
```

```
snmpgetnext -v2c -c docm_student 149.170.195.144 1.3.6.1.2.1.1.3.0
```

Explain your results.

2. Read the manpages for *snmpget*, *snmpgetnext* and *man 5 variables*. Write brief sentences describing the functions of *snmpget* and *snmpgetnext*.
3. Attempt to walk the **ifTable** using *snmpgetnext*. This means you need to repeatedly make calls to *snmpgetnext*.
4. Perform *snmpget* and *snmpgetnext* on these OIDs. system.1.0, 1.3.6.1.2.1.1.1.0, .iso.org.dod.internet.mgmt.mib-2.system.sysDescr.0, 1.3.6.1.2.1.1.sysDescr.0.
5. Read the manpage on *snmptranslate*, what is its function?

Attempt some of the examples in the manpage. `snmptranslate -Td -OS OID` is particularly worth a try. *OID* is an object identifier (see man 5 variables).

6. Read the man page on *snmpwalk*. What does it do?

Use *snmpwalk* to obtain the **ifTable**.

If you want to look at the ifTable direct the output of *snmpwalk* to a file and then look at the file in gedit. Turn off text wrapping in gedit to see the columns clearly.

7. Write a script that polls the appropriate objects in **ifTable** and then calculates the percentage utilisation of the fast ethernet interface of dali. You could also try this whilst you are pinging dali.

Notes: The expression in the lecture notes for the utilisation was for half-duplex communication. How should it be modified in this case?

You need to do some arithmetic for this (see Advanced Bash Scripting Part 3, Chapter 12 <http://tldp.org/LDP/abs/html/arithexp.html>). Unfortunately with shell scripting you can only do integer arithmetic. So how are you going to solve this problem?

8. Read the man page on *snmpwalk*. What does it do?

Try *snmpwalk* for dali. Do you know what all the fields in the output mean?